



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,935	01/07/2002	Yukihisa Kobayashi	9319S-000319	4909
27572	7590	06/12/2006		EXAMINER
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			PHAN, THIEM D	
			ART UNIT	PAPER NUMBER
			3729	

DATE MAILED: 06/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/041,935	KOBAYASHI, YUKIHISA
	Examiner	Art Unit
	Tim Phan	3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 03 May 2006.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 15,16,21-23,25,26,28-32,37 and 38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 15,16,21-23,25,26,28-32,37 and 38 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/03/06 has been entered.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 15, 23 and 28-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Uchiyama (US 6,265,770 B1).

**With regard to claim 15,** Uchiyama teaches a process of mounting a semiconductor component on a substrate (Abstract), comprising:

- solder- mounting first components (Fig. 1, 2; col. 5, lines 20+) within a pair of first

regions (Fig. 1, area of 2) on the substrate (Fig. 1, 3);

- after mounting the first components, arranging an anisotropic conductive film (Fig. 1, 4) within a band region (Fig. 1, surround of A) of the substrate located between the pair of first regions, the band region having a major axis (Fig. 1, length of 30 and a minor axis (Fig. 1, width of 3) with the major axis being greater than the minor axis;
- arranging a second component (Fig. 1, 6) on the anisotropic conductive film (Fig. 1, 4); and
- thermocompression-bonding (Col. 5, lines 56 ff.) the second component (Fig. 1, 6) within a region of the band region using a compression bonding head or a press-bonding process (Abstract) which must use a pressing device or head, with said anisotropic conductive film (Fig. 1, 4) disposed between the second component and the band region;
- wherein the band region extends toward the output side terminal such that the major axis of the band region is substantially perpendicular to the output side terminal (Fig. 1, 12).

**With regard to claims 23 and 28,** Uchiyama teaches that the first component (Fig. 1, 2) is selected from the group of passive and mechanical components (Col. 5, lines 15+), and the second component comprises a semiconductor device (Fig. 1, 6; col. 11, line 37) or LCD or power source IC.

**With regard to claim 29,** Uchiyama teaches that the band region (Fig. 1, surround of A) can be extended from one end to the other end of the substrate (Fig. 1, 3).

**With regard to claim 30,** Uchiyama teaches that the band region (Fig. 1, surround of A) extends rectilinearly along the substrate (Fig. 1, 3).

**With regard to claim 31,** Uchiyama teaches that there are wiring patterns (Fig. 1, 11) on the substrate (Fig. 1, 3) in the band region (Fig. 1, surround of A).

**With regard to claim 32,** Uchiyama teaches a dummy electrode or ground wire (Fig. 1, 12) at a position associated with the second component or LCD chip (Fig. 1, 6).

*Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 16, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchiyama (US 6,265,770 B1).

**With regard to claim 16,** Uchiyama teaches a process of mounting a semiconductor component on a substrate, which reads on applicant's claimed invention, except for mounting the first component (Fig. 1, 2) on the substrate (Fig. 1, 3) by a solder reflow treatment.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to solder (Col. 5, lines 20 ff) the connection by reflow treatment, which is well known in the art, in order to increase production.

**With regard to claim 25,** Uchiyama teaches the claimed invention, except for providing the alignment marks outside the band region (Fig. 1, surround of A).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the alignment marks outside the band region since it was known in the art that reference marks are utilized to assign an exact location of a band region (Fig. 1, surround of A).

**With regard to claim 26,** Uchiyama teaches that a bonding region by ACF or band region is selected (Fig. 1, surround of A) where the components are soldered (Col. 5, lines 20+) to the substrate by conventional technique such as solder reflow in order to speed up the soldering process.

6. Claims 21, 22, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchiyama in view of Uchiyama et al (US 5,847,796).

**With regard to claim 21,** Uchiyama teaches a process of mounting a semiconductor component on a substrate by press-bonding (Abstract), comprising:

- arranging a band region (Fig. 1, surround of A) of a surface of the circuit board or

substrate (Fig. 1, 3) between a pair of first regions (Fig. 1, areas of 2), the band region having a major axis (Fig. 1, length of 3) and a minor axis (Fig. 1, width of 3) with the minor axis being greater than the major axis ;

- soldering a first component (Fig. 1, 2; Col. 5, lines 20 ff.) onto the circuit board (Fig. 1, 3) outside of the band region (Fig. 1, surround of A); and
- following soldering of the first component (Fig. 1, 2) to the first region (Fig. 1, area of 2), thermocompression-bonding (Col. 5, line 58) a second component (Fig. 1, 6) to the circuit board within the band region (Fig. 1, surround of A) using an anisotropic conductive film (Fig. 1, 4) under a press-bonding process (Abstract); except for using a compression bonding head where the band region is wider than the head;
- wherein the band region extends toward the output side terminal (Fig. 1, 12) such that the major axis of the band region is substantially perpendicular to the output side terminal.

Uchiyama et al teach a method of bonding a driver IC (Fig. 3, 1) with a bonding tool or compression bonding head (Fig. 3, 4), slightly wider than the driver IC but much smaller than a band region or upper surface of the substrate (Fig. 3, 62) in order to have a more uniform load at a more uniform temperature of bonding.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the two teachings by applying the bonding tool or compression bonding head, as taught by Uchiyama et al, to the IC mounting process of Uchiyama, in order to have a more uniform load at a more uniform temperature of bonding.

**With regard to claim 22,** Uchiyama et al in view of Uchiyama teach the claimed invention, including the thermal press-bonding (Uchiyama, Col. 5, lines 57+) and a heated bonding head or bonding tool (Uchiyama et al, Fig. 10, 4) pressing against the component (Uchiyama et al, Fig. 10, 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a heated bonding head pressing against the component (Uchiyama et al, Fig. 10, 1) in selected area (Uchiyama, Fig. 1, area of A) without hitting the first component (Uchiyama, Fig. 1, 2) in order to concentrate all the heat toward melting the anisotropic conductive film (Uchiyama, Fig. 1, 4) under the chip (Uchiyama, Fig. 1, 6).

**With regard to claim 37,** Uchiyama teaches that the band region (Fig. 1, surround of A) is narrower than a surface of the circuit board or substrate (Fig. 1, 3).

**With regard to claim 38,** Uchiyama teaches that the second region (Fig. 1, A) is disposed on the surface of the circuit board (Fig. 1, 3) on a side of the circuit board that opposed the first regions

***Response to Arguments***

7. Applicants' arguments with respect to claims 15, 16, 21-23, 25, 26, 28-32, 37 and 38 have been considered but are moot in view of the new grounds of rejection.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tim Phan whose telephone number is 571-272-4568. The examiner can normally be reached on M - F, 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tim Phan  
Examiner  
Art Unit 3729



A. DEXTER TUGBANG  
PRIMARY EXAMINER

tp  
June 8, 2006